NASA prepares to extract data as Kepler runs very low on fuel

An artist's composite of the Kepler telescope. Photo: NASA | Photo Credit: Reuters

Scientists at NASA are preparing to download the latest bit of data stored in its plant-hunting Kepler space telescope as the spacecraft is now running “very low” on fuel.

The US space agency has placed the spacecraft in a no-fuel-use safe mode to save the remaining fuel so that data extraction can be completed, NASA said on Friday.

On August 2, the Kepler team will command the spacecraft to awaken from its no-fuel-use state and manoeuvre the spacecraft to the correct orientation and downlink the data.

Once the data has been downloaded, the expectation is to start observations for the next campaign with any remaining fuel.

But as of now, returning the data back to Earth is the “highest priority” for the remaining fuel.

We've paused science observations for @NASAKepler to download recent science data after receiving an indication that the spacecraft is very low on fuel as expected. Our team is monitoring the fuel closely as we expect to run out in the next few months: https://t.co/rES0NHRsmP pic.twitter.com/kthrcEiwjb

Since May 12, Kepler has been on its 18th observation campaign, staring at a patch of sky towards the constellation of Cancer it previously studied in 2015.

The data from this second look will provide astronomers with an opportunity to confirm previous exoplanet candidates and discover new ones.

To bring the data home, the spacecraft must point its large antenna back to Earth and transmit the data during its allotted Deep Space Network time, which is scheduled in early August.

Until then, the spacecraft will remain stable and parked in a no-fuel-use safe mode.

If the manoeuvre and download are successful, the team will begin its 19th observation campaign on August 6 with the remaining fuel, NASA said, adding that it will provide an update after the scheduled download.

The US space agency has been monitoring the Kepler spacecraft closely for signs of low fuel for quite some time now, and expects it to run out of fuel in the next few months.

Launched in 2009, the Kepler mission is specifically designed to survey our region of the Milky Way galaxy to discover hundreds of Earth-size and smaller planets in or near the habitable zone and determine the fraction of the hundreds of billions of stars in our galaxy that might have such planets.

Among other findings, recently 24 new planet discoveries were made using data from the 10th observation campaign, adding to the spacecraft’s growing bounty of 2,650 confirmed planets.

The Kepler space telescope, which is now 94 million miles away from Earth, has survived many potential knock-outs during its nine years in flight, from mechanical failures to being blasted by cosmic rays.

In 2013, Kepler's primary mission ended when a second reaction wheel broke, rendering it unable to hold its gaze steady at the original field of view.

The spacecraft was given a new lease on life by using the pressure of sunlight to maintain its pointing, like a kayak steering into the current.

Reborn as "K2," this extended mission requires the spacecraft to shift its field of view to new portions of the sky roughly every three months in what scientists refer to as a "campaign."

Initially, the Kepler team estimated that the K2 mission could conduct 10 campaigns with the remaining fuel.

It turns out scientists were overly conservative in their estimate. The mission has already completed 17 campaigns, and since May 12, Kepler has been on its 18th observation campaign.

But scientists now know that its life is coming to end very soon.

NASA in April launched another planet-hunting spacecraft, the Transiting Exoplanet Survey Satellite (Tess).

After the Kepler space telescope, Tess is the second spacecraft which will search for planets outside our solar system, including those that could support life.

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